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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/527,634	03/17/2000	Sun Man Lo	10262-013100US	3050

7590 11/13/2003

Paul C Haughey
Townsend and Townsend and Crew LLP
Two Embarcadero Center
8th Floor
San Francisco, CA 94111-3834

EXAMINER

SORRELL, ERON J

ART UNIT	PAPER NUMBER
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2182

DATE MAILED: 11/13/2003

10

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/527,634

Applicant(s)

LO ET AL.

Examiner

Eron J Sorrell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-10 is/are allowed.
- 6) ☒ Claim(s) 1,2,5,6 and 11-13 is/are rejected.
- 7) ☒ Claim(s) 3 and 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1,2, and 11-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Michael et al. (U.S. Patent No. 5,287,458 hereinafter "Michael").

3. Referring to claim 1, Michael teaches a universal asynchronous receiver transmitter (UART) comprising:

a first-in, first-out (FIFO) buffer (see item labeled 42 in figure 2);

a shift register coupled to the FIFO buffer (see item labeled 40 in figure 2);

a serial transmission line coupled to the shift register for connecting to a remote processor (see item 11 in figure 2 and 22-29 of column 4);

a circuit for detecting the last word transmitted from the FIFO buffer of the serial transmission line (see lines 7-30 of column 8);

a transmitter empty circuit for generating a control signal relating to the availability of the serial transmission line on a control line when a last word transmitted from the FIFO buffer is detected (see lines 7-30 of column 8);

a delay circuit for delaying generation of the control signal for a programmable delay time (see lines 31-49 of column 15; Note that the delay is calculated using the time of the last stop bit. The number of stop bits is programmable (see lines 9-17 of column 5)); and

a programmable register for setting the programmable delay time (see lines 9-17 of column 5; Note the number of stop bits is programmable and is directly used in the delay time calculation).

4. Referring to claim 2, Michael teaches the control signal is triggered from the last stop bit of the last word (see lines 29-37 of column 1 and lines 7-30 of column 8).

5. Referring to claim 11, Michael teaches the stop bit is detected in the shift register (see lines 7-30 of column 8).

6. Referring to claim 12, Michael teaches the control signal is an RTS signal (see lines of 47-59 of column 1; Note the Examiner is relying on Applicant's definition of the RTS signal found at lines 12-17 of the applicant's specification).

7. Referring to claim 13, Michael teaches a universal asynchronous receiver transmitter (UART) comprising:

- a first-in, first-out (FIFO) buffer (see item labeled 42 in figure 2);

- a shift register coupled to the FIFO buffer (see item labeled 40 in figure 2);

- a serial transmission line coupled to the shift register for connecting to a remote processor (see item 11 in figure 2 and 22-29 of column 4);

- a circuit for detecting the last word transmitted from the FIFO buffer of the serial transmission line (see lines 7-30 of column 8);

- a transmitter empty circuit for generating a control signal relating to the availability of the serial transmission line on a control line when a last word transmitted from the shift register is detected (see lines 7-30 of column 8);

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a delay circuit for delaying generation of the control signal for a programmable delay time (see lines 31-49 of column 15; Note that the delay is calculated using the time of the last stop bit. The number of stop bits is programmable (see lines 9-17 of column 5)); and

a programmable register for setting the programmable delay time (see lines 9-17 of column 5; Note the number of stop bits is programmable and is directly used in the delay time calculation).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Michael in view of Michael (U.S. Patent No. 5,140,679 hereinafter "Michael '679").

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10. Referring to claim 5, Michael fails to teach the programmable register being a 4-bit register.

Michael '679 teaches the UART architecture can be of different sizes (see lines 28-47 of column 5).

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the apparatus of Michael with the teachings of Michael '679 such that the programmable register is a 4-bit register to reduce the amount of hardware in the system.

11. Referring to claim 6, Michael teaches the delay circuit and the programmable register being a single circuit and the register connected to control the delay of the control signal for the channel (see lines 31-49 of column 15), however, Michael fails to teach there being a plurality of channels, each channel having a FIFO buffer, the circuit for detecting the last word and the transmitter empty circuit.

Michael '679 teaches a UART comprising a plurality of channels, each channel having a FIFO buffer, the circuit for detecting the last word and the transmitter empty circuit (see lines 14-17 of column 1).

It would have been obvious to one of ordinary skill in the art at time of the applicant's invention to modify the apparatus

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of Michael with the teachings of Michael '679 such that it comprises a plurality of channels each having a FIFO buffer, the circuit for detecting the last word and the transmitter empty circuit. One of ordinary skill in the art at the time of the applicant's invention would have been motivated to make such modification in order to allow the apparatus to transmit to a plurality of devices simultaneously.

Allowable Subject Matter

12. Claims 3 and 4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. Claims 7-10 are allowed.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following references are cited to further show the state of the art as it pertains to UARTs:

U.S. Patent No. 6,381,703 to Noh

U.S. Patent No. 5,619,544 to Lewis et al.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eron J Sorrell whose telephone number is 703 305-7800. The examiner can normally be reached on Monday-Friday 9:00AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey A Gaffin can be reached on 703 308-3301. The fax phone number for the organization where this application or proceeding is assigned is 703 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305-3900.

EJS
November 6, 2003


JEFFREY GAFFIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100